

ROLE OF RELATIVELY SMALL-SCALE LOGISTICS CONTRIBUTIONS  
IN NORTH ATLANTIC TREATY ORGANIZATION OPERATIONS

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General Studies

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the US Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

## ABSTRACT

ROLE OF RELATIVELY SMALL-SCALE LOGISTICS CONTRIBUTIONS  
IN NORTH ATLANTIC TREATY ORGANIZATION OPERATIONS, by MAJ Vaidas  
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In North Atlantic Treaty Organization, an entity of 26 member countries, logistics support to operations is challenged by a limited number of countries that are contributing logistics capabilities. These are large countries that bring a substantial amount of logistics capabilities into theater creating public good--logistics support, available for all in the theater. For small countries this situation is acceptable, because they enjoy multinational logistics as free-riders contributing to it only on an ad hoc basis. Therefore, small nations are interested in very limited logistics contributions, resulting in ineffective multinational logistics today.

NATO should work with small countries identifying their comparative advantage capabilities. These will be so-called “niche” capabilities that small country can successfully provide. Through well-coordinated specialization of small countries in certain logistics areas, NATO can get considerable contributions from them. This will share logistics burden among all NATO members and also make multinational logistics system more effective and reliable.

To achieve good coordination and management of logistics activities, these processes have to be run by a single authority. Current NATO logistics doctrine provides enough tools to implement multinational logistics; however, NATO lacks authority to effectively implement these tools. Forceful NATO leadership is therefore necessary in achieving effective multinationality.

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## ACRONYMS

AJP	Allied Joint Publication
CSS	Combat Service Support
C2	Command and Control
DPQ	Defense Planning Questionnaire
FG	Force Goals
HNS	Host Nation Support
ISAF	International Security Assistance Force
JFC	Joint Force Commander
JOA	Joint Operations Area
KFOR	Kosovo Force
LFPAC	Logistics Force Planning Advisory Committee
LN	Lead Nation
LOGREP	Logistics Reporting Tool
LPC	Logistics Planning Conference
MJLC	Multinational Joint Logistics Center
MILU	Multinational Integrated Logistics Unit
MNL	Multinational Logistics
MOU	Memorandum of Understanding
NATO	North Atlantic Treaty Organization
OPCON	Operational Control
PfP	Partnership for Peace
RSN	Role Specialist Nation
SFOR	Stabilization Force



STANAG	NATO Standardization Agreement
TCN	Troop Contributing Nation
TOA	Transfer of Authority

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## CHAPTER 1

### INTRODUCTION

The key to successful logistics support for our mobile and flexible multinational forces of the future lies in enhanced Alliance cooperation and coordination. This refers firstly to the links between member nations, secondly to those between nations and NATO, and thirdly between military and civil agencies.

Lt.Gen. Antonio Milani, NATO's Sixteen Nations

#### Background

In the early 1990s NATO started to shift its focus in logistics from purely national responsibility towards a multinational approach. The main reason for this was that the future NATO operational environment demanded something more than territorial defense forces and huge stagnate supply stocks. The territorial defense of Western Europe was no longer the main issue, and NATO's attention shifted to world crises. In order to properly respond, NATO needed a capable, mobile, and flexible logistics structure. However, nations held their logistics capabilities and were reluctant to share them with other nations. In addition, NATO never had a need for a strategic doctrinal framework enabling multinational logistics (MNL). In 1992 the situation started to change with the introduction of the idea of "collective responsibility for logistics support of NATO multinational operations."<sup>1</sup> According to this, logistics responsibility has to be shared among nations and NATO authorities. Subsequent NATO operations in Bosnia and Herzegovina (SFOR) served as a catalyst for further development of MNL principles. First, NATO operations identified the need for closer cooperation among a number of nations providing logistics support. Shortfalls that identified potential areas of benefit were competition for scarce resources in theatre, redundant logistics capabilities, lack of

visibility and transparency over available capabilities, lack of logistics cooperation, and coordination between nations. However, at the same time they called for significant improvements in planning and management of MNL. Second, the involvement of Partnership for Peace (PfP) countries in NATO operations significantly enhanced the total number of participating countries. This called for even more effort in clearer coordination and cooperation in logistics.

By now, MNL has become a key word in NATO when it comes to logistics support of operations. It is needless to discuss the value of this concept, because first, numerous authors discussed it, and second, there is no alternative to it. What really needs attention is the effective implementation of it. After the Cold War, politicians' message to the military in Europe was simple--savings. The military came up with the answer--multinational operations. Exactly the same logic applies to logistics support--savings can be achieved through combining the efforts of several nations. The value of MNL was proven on a number of occasions. However, it also was proven that realization of MNL, though beneficial and desirable, is not always easy and even possible.<sup>2</sup> Currently, MNL is not yet a common practice in NATO.

The problem or maybe the advantage is that today there are more countries in NATO that do not have the capabilities they need in order to perform their out-of-area missions. These capabilities are theater-level logistics assets that small countries do not have for obvious reasons. For small NATO countries with extremely limited resources, MNL seems like the only possible solution. On the other hand, it is in NATO's interest to have all required logistics assets for the theater commander. There is space for trade.

### Scope

Small NATO countries have logistics potential, and their contributions to operations can become significant if they contribute comparative advantage capabilities and if NATO has enough authority to coordinate them.

Brigade and below level logistics capabilities generally are organic to the combat or combat support unit and are the responsibility of each troop contributing nation (TCN) to provide them for their own unit. The issues are more complex at division and above levels where multinational units need MNL support. This is where most of the logistical footprint is produced and where the cooperation in logistics can be most advantageous. This is advantageous particularly for smaller countries, because by providing logistics capability that it has available it can expect some other services provided from other countries.

The last NATO enlargement brought on board seven nations that could be referred to as those providing “smaller” logistics capabilities. If added to this number some current PfP nations with similar capabilities NATO will end up with quite an impressive number of nations. Every NATO member has some logistics capabilities available and plans for its future development. However, if taken individually their capabilities in most cases are insignificant and even invisible. Moreover, countries often have no clear vision of what capabilities are most advantageous for developing in the multinational context. Therefore, the role of small countries in MNL is an issue that is not stressed enough, and it demands special attention today.

The primary thesis question is, How can logistics contributions from relatively small NATO nations become more effective during multinational operations? To answer this question several more questions have to be answered.

First, what are the capabilities in which small nations have a comparative advantage? The term “niche capability” is spelled out often today but without emphasizing its real meaning. It is not required to produce a capability absolutely cheaper and under better conditions to find this niche. It is only required to do so relatively comparing to other countries and other capabilities. Obviously, countries will have different reasons and interests in choosing such capabilities. However, some common characteristics can be developed that help identify comparative advantage capabilities.

Another important question is, What are the favorable conditions for small nations’ to contribute their capabilities effectively to NATO operations? Is there a comprehensive and easy enough way for small countries to plug into NATO logistics system? It is understandable for all members that NATO is an alliance and its capabilities come from its nations. However, necessary conditions must be created to foster support for nations to contribute.

The most important is the end state--availability of national logistics contributions at the time and place needed by a NATO commander. If favorable conditions are created for the involvement of small countries, this could foster multinational logistics in general and assure availability of national assets for operation.

This thesis will use one of the theories of political economy as a possible tool for identification of capabilities that small countries could produce and provide. This is a comparative advantage theory. According to it, nations should specialize in capabilities

which they can provide either or both relatively cheaper, and under better conditions comparing to other nations. This approach would bring the most net advantage for NATO and all the nations and guarantee overall savings. It would also provide the conditions for countries to develop capabilities that they feel comfortable with.

This chapter introduces and describes the problem that this thesis will analyze-- more active and effective involvement of small countries into multinational logistics in NATO. Chapter 2 will review different sources of information and literature that will be used as references for the research. It will also introduce mechanisms that chapter 4 will use for analysis. Chapter 3 describes the method used to solve the problem. The main item here is the criteria used for identifying the most favorable conditions that should exist in the NATO environment to allow effective involvement of small nations' logistics capabilities. Chapter 4 contains the main analysis of the evidence. It aims at answering primary and secondary research questions as well as proving or disproving the thesis statement. Chapter 5 restates the thesis statement, summarizes the analysis, and provides recommendations addressing the research problem.

### Definitions

Combined Logistic Support. The pooling of specified resources by member nations for use by NATO nations as decided by a coordinating authority.<sup>3</sup>

Comparative Advantage. The low relative cost of goods compared to other countries.<sup>4</sup>

Coordinating Authority. The authority granted to a commander or individual assigned responsibility for coordinating specific functions or activities involving forces of two or more countries or commands, or two or more services or two or more forces of the



same service. He has the authority to require consultation between the agencies involved or their representatives, but does not have the authority to compel agreement. In case of disagreement between the agencies involved, he should attempt to obtain an essential agreement by discussion. In the event he is unable to obtain essential agreement he shall refer the matter to the appropriate authority.<sup>5</sup>

Lead Nation (LN). One nation assumes the responsibility for procuring and providing a broad spectrum of logistic support for all or a part of the multinational force and/or headquarters. Compensation and/or reimbursement will then be subject to the agreements between the parties involved. The lead nation may also assume the responsibility to coordinate logistics of other nations within its functional and regional area of responsibility.<sup>6</sup>

Multinational Logistics (MNL). The overarching term for the different modes to logistically support operations other than purely national, such as multinational Integrated logistic support, role specialisation support, and lead nation logistic support.<sup>7</sup>

National Logistics Support. A nation takes full responsibility for procuring and providing logistic support to her forces. This support can be provided on a solely national basis and/or through bilateral or multilateral agreements with other nations, NATO or other organizations as appropriate.<sup>8</sup>

Multinational Integrated Logistics Support. Two or more nations agree to provide logistic assets to a multinational logistic force under operational control of a NATO commander for the logistic support of a multinational force.<sup>9</sup>

Multinational Integrated Logistics Unit (MILU). A MILU is formed when two or more Nations agree, under the operational control (OPCON) of a Force Commander at the joint force or component level, to provide logistic support to a multinational force.<sup>10</sup>

Role Specialist Nation (RSN). One nation assumes the responsibility for procuring a particular class of supply or service for all or a part of the multinational force. Compensation and/or reimbursement will then be subject to agreements between the parties involved.<sup>11</sup>

### Assumptions

In this thesis, is assumed the concept of multinational logistics support has a future in NATO. Therefore, it is worth looking for possible improvements in MNL concerning more active involvement of small nations. Scarce resources, intensity, and diversity of NATO missions suggest this assumption.<sup>12</sup>

The second assumption is that NATO nations will agree on NATO goals and policies toward particular contingency. The strength of NATO is in its unity, without it the existence of the organization itself may become questionable. This is an important assumption, because it implies that in general nations will be willing and able to achieve a consensus and delegate enough authority to a NATO commander in order to actually enable him to redistribute logistics resources in the theater.

The third assumption is that defense spending in European countries and in particular in small European NATO allies will not decrease to the level that development will become impossible. The author can tell from experience, that if there is a shortage of resources in military, logisticians are the first to feel it. However, as every other function,

logistics needs investment. Without it a force multiplier--logistics--can easily become a showstopper.

### Limitations and Delimitations

This thesis will remain limited to two key areas: the application of comparative advantage theory in determining potential small countries' contributions and the study of NATO logistics documentation on how it implements MNL. These two areas will be looked at from a small countries' perspective. Mechanisms that NATO uses in realization of MNL will be examined with the purpose to develop a set of conditions most favorable for small nations' contributions.

The following delimitations have a direct influence on the research question, but this thesis will not address them for the reasons provided.

First, it will not try to defend or prove the importance and benefits of multinational logistics due to the reasons identified in assumption section above.

Second, it will not go into a detailed examination of national logistics capabilities and systems. These have direct impact on MNL; however, they very much differ from nation to nation. Most important is to identify the common characteristics of capabilities that are the most suited for small nations and the conditions under which small nations would actively contribute to NATO operations. Then each individual country can apply these common tools for its specific situation.

Third, no actual cost assessment of individual capabilities for particular countries will be done, as this would require significant time and may not be possible due to the limitations accessing certain data, particularly data on national defense spending.

### Anticipated Problems

In this thesis two primary sources of information are used: NATO logistics doctrinal documents and examples from NATO operations. There is no problem with access to the earlier source. However, some important and very much relevant practical information might be not accessible due to classification. This problem will be overcome by adding secondary sources of information, such as articles of NATO officers and by interviewing some NATO officials by electronic mail.

### Significance of the Research

The operational environment changed radically for NATO during the last decade. From the logistics standpoint, this change resulted in a need for much closer multinational coordination and cooperation. Countries with relatively modest logistics capabilities became involved in NATO operations and became members of the alliance. Such countries cannot bring full-spectrum logistics capabilities to the pool primarily because of economical constraints. Sometimes their capabilities are so small that they are nearly equal to zero. This situation is not likely to change quickly. However, special situations of small countries have to be recognized and addressed. They and NATO headquarters (HQ) should realize what capabilities are best for small members to produce in the context of NATO. Only when looking at this broader perspective can they see full benefits of production of a particular capability. This thesis will characterize capabilities that are best suited for small countries. It will also list the condition that NATO must create in order to foster multinational contribution and cooperation. Experience, success, and demonstrated benefits of this cooperation will build overall confidence in MNL. So far, it has had very little progress in NATO. The NATO force generation process is more

reactive than proactive in this case: after nation A proposes its logistics capability in support of a particular operation which is already in progress, NATO then decides where and how to employ it. “Multinational logistics . . . has not been preplanned and implemented prior to force generation for a specific operation.”<sup>13</sup> This does not assist nations in logistics planning. It also degrades NATO capabilities and responsiveness during operations. Therefore, it is important to identify and agree on certain logistics capabilities that certain NATO countries can specialize in and provide for future operations. This is not new idea, but it never received enough attention in NATO to materialize.<sup>14</sup> It is important to revitalize this idea, because it is a window of opportunity for both NATO and individual nations to obtain more capabilities at less cost.

Finally, if NATO finds solutions on how to make logistics contributions of its small members more effective, similar approaches could be applied to coalitions outside of NATO. This becomes important in today’s diverse world where coalitions play an important role in achieving political goals by military means.

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<sup>1</sup>NATO, MC 319, *NATO Principles and Policies for Logistics* (Brussels: NATO Standardization Agency, 26 September 1992).

<sup>2</sup>Examples of exclusively national logistics support in Kosovo and Afghanistan.

<sup>3</sup>NATO, AAP-6(2004), *NATO Glossary of Terms and Definitions* (Brussels: NATO Standardization Agency, 2004).

<sup>4</sup>Allan V. Deardorff, “Benefits of Costs of Following Comparative Advantage” (Ann Arbor: The University of Michigan, 12 January 1998, accessed 5 January 2004) [article on-line]; available from <http://www.fordschool.umich.edu/rsie/workingpapers/Papers401-425/r423.PDF>; Internet.

<sup>5</sup>NATO, AJP-4.9, *Modes of Multinational Logistics Support* (Brussels: NATO Standardization Agency, ratification draft, December 2002).

<sup>6</sup>NATO, MC 319/2, *NATO Principles and Policies for Logistics* (Brussels: NATO Standardization Agency, 26 September 2003).

<sup>7</sup>*Ibid.*

<sup>8</sup>NATO, MC 319.

<sup>9</sup>NATO, MC 319/2.

<sup>10</sup>NATO, AJP-4.9.

<sup>11</sup>*Ibid.*

<sup>12</sup>NATO, *NATO Handbook* (Brussels: NATO Office of Information and Press, 1998), chap. 8, 174.

<sup>13</sup>Robert Alce, E-mail to author, 29 November 2004.

<sup>14</sup>The White House, Office of the Press Secretary, “NATO: Building New Capabilities for New Challenges” [fact sheet on-line]; available from <http://www.state.gov/p/eur/rls/fs/15384.htm>; Internet; accessed 3 November 2004.

## CHAPTER 2

### REVIEW OF LITERATURE

It is worth noting up front that logistics contributions from small nations are not identified as a specific issue in NATO doctrine or lessons learned documentation. Instead, logistics issues are viewed in NATO as a whole. This generic approach somewhat hides the problem. In most cases nearly one-half of current NATO member nations is logistics consumers providing no or very limited logistical capabilities to NATO operations.

In order to answer the secondary research questions, two types of information will be considered and analyzed. Current NATO logistics doctrinal documents and practical examples from NATO operations on the role of small nations will first be analyzed. Then a comparative advantage principle and an explanation why it is useful tool for small nations to determine their potential contributions will be introduced.

#### Review of Doctrine

During recent years, NATO has developed a series of doctrinal publications with the focus on multinational logistics. Nations are still ultimately responsible for support of their own force contributions;<sup>1</sup> however, NATO authorities do a large amount of logistics planning, coordination, and execution at strategic and operational levels.<sup>2</sup> For multinational logistics to be effective, participating nations must know, understand, and be able to implement NATO logistics doctrine. It is more important for small nations, than for large ones, because more significant capabilities can be created through cooperation. Furthermore, operational experience can be received, resources can be saved, and more attention and resources can be diverted to national logistics.

NATO logistics policy and principles are described in NATO Military Committee document MC 319/2.<sup>3</sup> This is political level document describing nine logistics principles, and providing general policy guidelines for key logistics areas. Based on this document NATO constructs its logistics system.

The keystone document describing logistics in NATO is AJP-4(A). With much more detail, it describes the following key areas: NATO concept of logistic support, logistic support planning, and logistic functional areas. The document touches the strategic level, but mainly focuses on the operational level logistics.<sup>4</sup>

Chapter 1 of AJP-4(A) discusses NATO logistics principles and their practical application. Each of described principles is equally relevant to all NATO nations; however, overarching is the principle of responsibility, which clearly states “collective responsibility of Nations and NATO authorities for logistic support of NATO multinational operations.”<sup>5</sup> Depending on the type of particular operation, this responsibility may shift towards NATO or nations, but it is expected that both NATO and nations will seek to identify possibilities for multinationality and will willingly enter into multinational arrangements. This approach will ultimately “optimize the provision and use of limited resources.”<sup>6</sup> This is where small nations, by being active and more flexible than large ones, can more effectively utilize multinational solutions by bringing their contributions together.

Furthermore, this chapter defines the NATO logistics support concept as “responsive support to any operational deployment making best use of the logistic assets and resources available in the JOA.”<sup>7</sup> That may include all logistics assets in the Joint Operations Area (JOA) and not only those nations dedicated to a NATO commander.



Logistics capabilities used to support national units may also be used to execute MNL support. Doctrine indicates: “The actual logistic concept for a NATO operation will be dramatically affected by the type and amount of logistic forces, and the TOA [transfer of authority] limitations imposed on participating forces.”<sup>8</sup> In order to make the support responsive, the required type and amount of logistics capabilities must be generated at the right time. Doctrine leaves a large amount of multinational coordination to be resolved between nations prior to or during the operation without NATO involvement. This is considerable flexibility for the nations, but also a less assured result for NATO. For example, small nations will look for every possibility to receive higher than organic logistics support from other nations or multinational units (that is, right thing to do doctrinally)<sup>9</sup> and not contributing any logistics resources. For a small nation this makes sense because large contributors bring significant logistics assets to the theater and are more capable of supporting small countries. Supplies and services that cannot be provided this way probably can be acquired through host-nation support (HNS) or contracting arrangements. However, when there are a high number of small contributors in the operation it creates a problem: the burden of logistics support lies on several key contributors.

This chapter also describes support options: from purely national support to use of MILUs. There is variety of tools available for nations and NATO to provide and manage logistics capabilities. Some are more suited for small nations than others are. They will be discussed in more details in the review of AJP-4.9.

Chapter 2 covers NATO logistics planning on strategic and operational levels.<sup>10</sup> Doctrinally, national logistic contributions, once offered to NATO during the Defense

Planning Questionnaire (DPQ) process, form the basis for the actual contribution to a particular operation. The exact contribution is finalized later during a series of logistic planning conferences (LPCs) prior to the operation. This means that national logistics planning must be a continuous process and that capabilities are planned without having a particular operation in mind. In other words, a nation is free to choose what logistic capabilities it will develop. This is important particularly for small nations, which are neither able nor willing to develop full-scale corps and theater logistic assets.

However, when a nation chooses to develop only certain capabilities, it automatically assumes that in the operational environment it will receive other services from other participating nations.

Next in the hierarchy of NATO logistics documentation are supporting joint doctrines. They address specific logistic functional areas. One of these is AJP-4.9,<sup>11</sup> with details describing support options that NATO and nations can use to support operations. Depending on the operational situation and required capabilities, nations can consider accepting the position of lead nation (LN) or role specialist nation (RSN) or entering into a multinational agreement with other nations to form MILU.<sup>12</sup> Doctrinally, roles and responsibilities of LN are very broad and include coordination and provision of a variety of logistics functions for a multinational force. This means that one country agrees to provide logistic support to all or part of a multinational force. Such a task will require numerous logistic personnel only to manage, and depending on the theater and operation it may require a large logistics contribution from the LN. For those reasons, this task may not be the option for a small nation to choose.

The remaining two support options--RSN and MILU--and the variations of the modes of multinational support--timesharing and logistics sorties<sup>13</sup>--can be considered by a small nation when deciding upon what and how to contribute.

Chapter 6 of AJP-4.9 describes the logistic areas where MNL solutions are most suitable. It provides an initial list of logistic capabilities that NATO needs for support of its operations. These are materiel distribution capabilities (transportation, materiel handling assets), recovery and evacuation assets, laundry and bath assets, sanitation service, and role 3 medical support. NATO logistics planners have developed this doctrinal list into generic capability packages that are listed later in this chapter. The approach that doctrine foresees for generation of these capabilities is a provision of complete functional unit or asset pooling under NATO logistics authority to form functional or multifunctional units. In this case, a nation dedicates a certain capability to the pool of forces with the NATO commander as tasking authority. These multinational units (MILU) then support part or all national contingents in the theater. To facilitate the formation process of such units, AJP-4.9 provides example of a memorandum of understanding (MOU) to be used between nations.<sup>14</sup>

However, it is very important to agree on what logistics functions small nations will provide that will be mutually beneficial for NATO and the contributing nations. This is where the comparative advantage principle will be applied.<sup>15</sup> It is worth recognizing that large armies have an absolute advantage against small armies in most if not in all logistics capabilities. They routinely use significantly larger quantities of these capabilities, that make them cheaper, and brings more experience. However, small countries still can contribute those capabilities where they are comparatively better off.

This is the essence of the comparative advantage principle. A country is said to have a comparative advantage in a certain capability if it can produce this capability at a lower opportunity cost than the other country can. The opportunity cost is defined as how much of one capability a country must give up in order to produce other capability comparing with other country. For example, to produce a port and terminal operating company, a large country must spend 100 units for equipment and 60 units for personnel. For the same capability, a small country has to spend 120 units for equipment and 70 units for personnel. It is obvious that a large country has an absolute advantage in this capability. In this case a large country has a comparative advantage in providing equipment, and a small country's comparative advantage is manpower. The manpower in the small new NATO members is often even cheaper than in large ones, and equipment is of the same and even higher cost due to the low required quantities. Therefore, a small country can produce and sustain, for example, ten movement control teams (manpower-intensive capability) for the cost of one port and terminal operating company (equipment-intensive capability), and a large country can only produce eight movement control teams for the same cost. Thus, a small country would be better off specializing in the capabilities that are less equipment intensive and more personnel intensive. That could also free some personnel in large countries for other tasks. This is an attractive principle for small nations: they cannot provide a broad spectrum of logistics capabilities, so they specialize in affordable capabilities that they can provide comparatively better. Large countries then can divert some resources to other areas. It also means that small nations during an operation will receive other goods and services from large participants. However, it does not mean that a country will get rid of all other logistics capabilities. This will not be

possible because of national military requirements. Small countries will continue to develop a variety of logistics capabilities for national use, but when it comes to supporting NATO operations, they will contribute their comparative advantage capabilities that they specialize in. Comparative advantage capabilities must be negotiated and agreed between NATO and each individual country, because each country most likely will have its own reasons and criteria for such capabilities. Chapter 4 will develop and list the common criteria for identifying comparative advantage capabilities. It is very important that such capabilities must be mutually advantageous--for the small country providing it and for NATO receiving it. If a comparative advantage theory is applied to NATO logistics support, it would make logistics more responsive and less costly and facilitate multinational operations. However, there are three issues for its successful application.

1. Nations that agree to specialize in comparative advantage capabilities must also agree to supervision and coordination from a single higher authority. Such an authority must be a designated logistics structure in the NATO chain of command. It is necessary to coordinate all multinational capabilities in order to get what is really needed to support NATO operations. The capabilities development process cannot be chaotic, otherwise duplications and shortfalls will not be avoided.

2. Nations that specialize in certain capabilities have to contribute these capabilities when required. Even if comparative advantage capabilities are available at the national level, political or economical reasons may preclude them from being committed for certain operations. Such a situation may be triggered by the basic NATO founding principle--voluntary participation, particularly in non-Article 5 operations. As

long as this issue remains unresolved, there is no guarantee that a nation will provide a capability when it is requested to do so.

3. Specialization in certain capabilities may restrict resources for development of other logistics capabilities that are nationally important or the other way around. Armed forces in small countries will not be able to develop only certain logistics capabilities and to get rid of all others. This issue must be resolved mainly at the national level, considering available resources and assigning resource priorities. Therefore, close coordination with NATO is required on what are those comparative advantage capabilities that are mutually beneficial.

The last doctrinal document that is important for this research is AJP-4.6(A).<sup>16</sup> It introduces and describes the Multinational Joint Logistics Centre (MJLC) as the entity that on operational level is suppose to coordinate all national logistic efforts to produce the most efficient support system for a NATO operation.

When established, MJLC initiates and coordinates consultations between nations on the provision of theater level logistics support. It has no authority to compel an agreement between nations. However, when a nation assigns its unit OPCON to a joint force commander (JFC) or when several nations agree to form MILU and assign it under OPCON to the same commander, the MJLC becomes the tasking authority for these units on behalf of the JFC. In this way the JFC obtains assets to provide logistics support to his force, and a logistics footprint of an individual nation can be minimized. In order to be successful, the MJLC has to coordinate the needs and capabilities of an extremely broad spectrum of logistics players in the JOA. Figure 1 illustrates this. The force logistics units are those national and multinational units that are under OPCON to JFC. The MJLC can

obtain additional logistics capabilities required at the theater level from the national support elements (NSEs) operating in JOA, if countries agree. Most likely such capabilities will be provided as logistics sorties--some service, that nation is capable of producing in the theater and do not fully need for own consumption. It agrees to provide it for the NATO force in theater. MJLC coordinates, that the service reaches the required contingents.

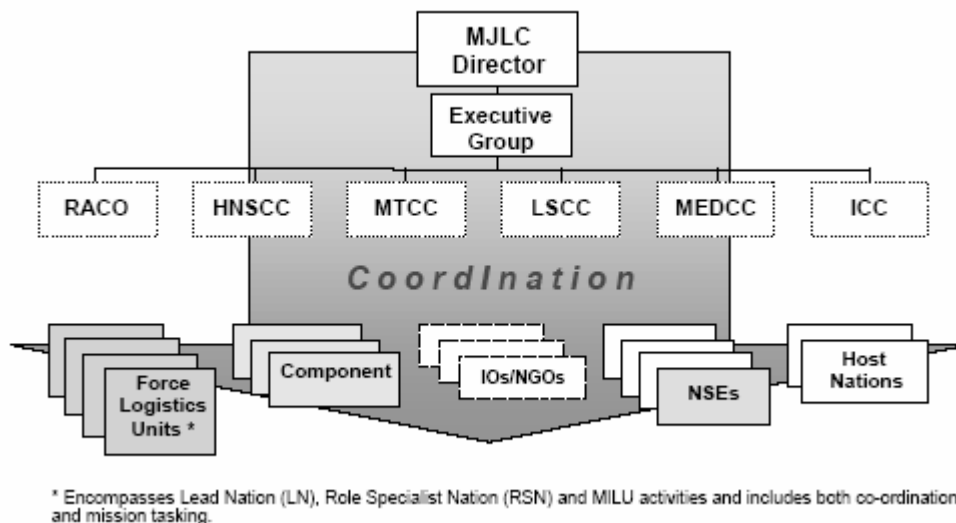


Figure 1. MJLC Coordination Elements

Source: NATO, AJP-4.6(A) Multinational Joint Logistics Centre (MJLC) Doctrine

MJLC is modular and can be designed for a particular operation to avoid unnecessary staffing. It is suppose to allow the JFC not only to plan the theater logistics but also to generate capabilities and employ them in the most efficient way. The effectiveness of MJLC highly depends on its activation time and the will of nations to rely on the MJLC's approach. The doctrine states that during the early stages of an operation nations will depend more on national support stovepipes and look for

multinational solutions later when a situation develops.<sup>17</sup> This may create difficulties later in the operation, because some countries (particularly large contributors) may not be willing to give up or change a logistics system that is already set up and working.

### Doctrine Summary

NATO logistics doctrine emphasizes multinationality in logistics as essential to operational success. It indicates ways and tools that NATO and nations can use to implement MNL solutions. To effectively employ them, all parties must have the capabilities and be willing to contribute them. For small nations it means specializing in and developing certain capabilities that are of a comparative advantage against other NATO members. In current NATO logistics doctrine there is nothing that denies application of this theory. It also means that one authority in NATO must effectively coordinate this process from its early stages, preferably. This would provide a high degree of visibility and coordination between nations and NATO, which is necessary to identify comparative advantage capabilities. This is where a unity of command in logistics, obtained by NATO, could prove extremely effective. However, the principle of unity of command in logistics, though it is stated in AJP-4(A),<sup>18</sup> is not so clearly developed in doctrinal publications.

### Review of Practical Examples

The purpose of this part is to review actual logistics contributions that NATO requires and that its small members provide for operations. This will assist in visualizing the real situation and help answer question in chapter 4--how to make this contribution more effective.



In general, why is multinational logistics the preferred method to organize support for NATO operations? It is so, because, when functioning, it creates public good: services or capabilities that are accessible for all participants in the operation.<sup>19</sup> Even those countries which are not contributing logistically or cannot contribute some specific capabilities can enjoy benefits of multinational logistics and receive services that otherwise they would not receive. When functioning, it reduces the range of required logistics support from individual participants. However, the NATO operation is usually so large that the amount of logistics capabilities required can only be supported by large participating countries. This is exactly what happens--large countries create national stovepipes into which small countries integrate and enjoy the provided support (they become “free-riders”). In most cases they are required to reimburse the service provider in one way or another. This then creates the impression in smaller countries that it is easier and more beneficial to reimburse and to not provide any logistics capability. However, public good--multinational logistics capability--created in this way cannot be lasting. The primary problem is not paying for the provided capability, but it is the generation of this capability and its availability for the operation. Enjoying multinational logistics as a public good can only be sustained if most NATO countries contribute to it: the number of free-riders must decrease. For that to happen, this public good must be centrally administered. That can be done only by NATO.

Each nation obviously has a specific set of criteria and priorities when developing certain functions. However, for small nations, specialization in some logistics functions brings some common benefits. Primarily, participation along with other nations in NATO operations brings multinational logistics experience to national forces. Personnel acquire

more real-life experience and have more possibilities to apply skills developed during the training. Secondly, by diverting more resources to logistics it contributes to the overall development of national logistics capabilities. The employment of national logistics assets in a multinational environment also brings some political benefits for a small nation. Important capabilities provided for a coalition operation can make a small nation more visible. That may help increase logistics funding in a small nation and thus provide more contributions. These are common reasons why small nations should look forward for more active participation in multinational logistics.

NATO needs logistics contributions from small nations because it allows the distribution of logistics burden more evenly among participating countries. Also, if small nations specialize in certain capabilities they can provide more timely quality service because it is unlikely that this small capability will be independently employed somewhere else at the time it is needed. Finally, the involvement of small nations builds broader coalitions. These are the main reasons why NATO should be interested in small nations' contributions.

NATO has developed a list of generic functional capabilities that it requires in order to support the operations.<sup>20</sup> The capabilities, listed in table 1, are the checklist for nations to consider possible contributions. Besides capabilities identified in table 1, small countries could also consider the provision of chaplain services, contracting specialists, and finance and resource management specialists (forward accounting support teams). These are high-value personnel positions; because besides national professional skills and experience, they will also be proficient in NATO procedures. On the other hand, these are not expensive functions to provide.

Table 1. Required NATO Logistics Capabilities	
Function and Capability	Function and Capability
<b>Movement and transportation</b>	<b>Supply and services</b>
HQ Ground Transportation Bde	HQ Supply Bn
HQ Ground Transportation Bn	Ammo Supply Coy
Medium Truck Coy	Field Services Coy
POL Truck Coy	POL Supply Coy
Water Truck Coy	Water purification detachment
Heavy Equipment Transport Coy	EOD platoon
Heavy Lift Trpt (CH-47)	<b>Infrastructure</b>
Medium Helicopter Trpt (UH-60)	HQ Engineer Bde
HQ Movement Control Bn	HQ GS Engineer Bn
Movement Control Coy	GS Engineer Coy
Movement Control Team	Seaport Construction Eng Coy
HQ Port Operating Bn	Railway Engineer Coy
Railhead Detachment	Bridging Coy
HQ Railway Management Coy	<b>Maintenance and repair</b>
Port and Terminal Operating Coy	HQ Repair/Maintenance Bn
Watercraft Coy	Repair Parts Coy
Airlift Control Element	Maintenance Coy
<b>Medical</b>	Heavy Materials Coy
HQ Medical Grp	Recovery Team
Role 3 Hospital (250 beds)	
Role 2 Medical Coy (Corps)	
Medical Evacuation Helicopters	
Medical Ground Ambulance Coy	
Casualty Staging Unit	
Medical Logistics Bn	

Currently, logistics contributions from small nations to NATO operations are most often limited to bilateral or multilateral arrangements to support national contingents. It is the realization of multinational logistics at some extent. However, it does not provide logistic assets to the JFC, who still has limited or no logistics flexibility in theater. At the same time, national resources in the JOA often are duplicated. Small NATO members, participating in the International Security Assistance Force (ISAF) are

Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, and Slovenia.<sup>21</sup> Their contributions are different. However, only the Czech Republic is providing a logistic capability--field hospital.<sup>22</sup> The situation was not much different during IFOR and SFOR missions in Bosnia and Herzegovina in 1996 and 2001. The same countries participated in one or another or both missions, though some of them at that time were not yet NATO members. With the exception of Bulgaria (Bulgaria provided a transportation platoon to the HELBA group), no logistics capabilities were provided for multinational use.<sup>23</sup> With some exceptions, these countries mainly contributed combat (infantry) units.

An example of successful cooperation in logistics is the Nordic Polish Support Group (NSG), created to support the NORDPOL brigade during IFOR. The NORDPOL brigade consisted of Danish, Finish, Norwegian, Swedish, and Polish units and was part of the US-led multinational division North (MND-N) in Bosnia and Herzegovina. All countries established their national support elements (NSEs) at Pecs, Hungary. Norway was the lead nation for NSG and provided the entire HQ company. The NSG HQ company camp platoon therefore was able to run the entire camp. The transportation platoon was transporting cargo, fuel, and water from NSEs to respective national units in the brigade AOR.<sup>24</sup> By this mutual agreement, countries avoided maintaining national assets to perform these tasks, which led to savings in human and materiel resources. However, NSG was a single nations' capability and not a multinational unit. The JFC had no access to this capability as it was serving only the national interests of five nations. Nevertheless, this is good example for small NATO nations to follow. They can

cooperate by providing certain capabilities to a multinational force in order to reduce their total footprint and to achieve an overall savings.

A successful example of multinational theater logistics support is the BELUGA group (later HELBA). It initially consisted of Belgian, Luxemburg, Greek, and Austrian contingents. Later it consisted of Greek, Bulgarian, and Austrian contingents. However, the mission remained the same: the performance of transportation to the theater of operations in Bosnia and Herzegovina in support of the multinational force.<sup>25</sup> The key to success was the willingness of participating nations to assign national resources OPCON first to Belgian, later to Greek command. This group, consisting primarily of small nations' contributions, provided theaterwide transportation for COM SFOR and even host nation authorities saving resources of much larger TCNs.

French lessons learned supplying fuel in Kosovo force (KFOR) highlights some important points for any nation intending to be a role specialist nation.<sup>26</sup> It is noted that RSN support means that NSE of one particular nation provides role specialist support to a NATO force in theater. That means setting up clear C2 relations between the RSN and the NATO commander, because NATO directs the assets that are not OPCON to it. In practice, the RSN is also responsible for the provision of everything that is required to perform the chosen logistics function. In the French example that meant fuel acquisition, storage, quality control, and distribution to the multinational contingents. To do that, the RSN may need to ask other nations to contribute some specific assets, that the RSN itself does not possess. This is an opportunity for small nations to contribute their small but important capabilities. Further, difficulties arise when it comes to multinational cost sharing for the services provided. The French experience is that costs simply "lie where

they fall.” That is extremely unacceptable for small nations, because supporting a large number of multinational units turns into a large amount of resources. If not reimbursed, small nation cannot sustain the service. This may be one of the reasons why small nations are reluctant to contribute logistics capabilities to NATO operations.

### Summary

From the above examples it is seen that small nations can and are willing to contribute common-function capabilities, such as transportation. The pattern is that these capabilities do not involve a large amount of sophisticated and expensive equipment but rather are manpower-intensive.

This chapter confirms an analysis methodology to be used in chapter 4 of this thesis. First, comparative advantage capabilities for small nations will be identified from the list provided in this chapter and using evaluation criteria from chapter 3. Second, the model will be built based upon how those capabilities can contribute to the operation in the most comprehensive and assured way. For comparison, some real-life examples, introduced in this chapter, will be analyzed more deeply in chapter 4. Third, the operational examples and the developed model will be compared to existing NATO doctrinal regulations in order to develop the recommendations in chapter 5.

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<sup>1</sup>NATO, AJP-4(A), *Allied Joint Logistics Doctrine* (Brussels: NATO Standardization Agency, ratification draft, December 2003), 1-9.

<sup>2</sup>Ibid., 1-10 through 1-13.

<sup>3</sup>NATO, MC 319/2, *NATO Principles and Policies for Logistics* (Brussels: NATO Standardization Agency, 26 September 2003).

<sup>4</sup>NATO, AJP-4(A), para. 0102, 1-1.

<sup>5</sup>Ibid., para. 0105.b, 1-2.

- <sup>6</sup>Ibid., para. 0105.d, 103.
- <sup>7</sup>Ibid., para. 0107, 1-5.
- <sup>8</sup>Ibid., para. 0106.b, 1-9.
- <sup>9</sup>Ibid., para. 0105.f, 1-3.
- <sup>10</sup>Ibid., para. 0202, 2-1.
- <sup>11</sup>NATO, AJP-4.9, *Modes of Multinational Logistics Support* (Brussels: NATO Standardization Agency, ratification draft, December 2002).
- <sup>12</sup>Ibid., chaps. 2, 3, 4.
- <sup>13</sup>Ibid., chap. 7.
- <sup>14</sup>Ibid., ann. A.
- <sup>15</sup>Steven Suranovic, “The Theory of Comparative Advantage—An Overview” [article on-line]; available from <http://internationalecon.com/v1.0/ch40/40c000.html>; Internet; accessed 19 October 2004.
- <sup>16</sup>NATO, AJP-4.6(A), *Multinational Joint Logistic Centre (MJLC) Doctrine* (Brussels, NATO Standardization Agency, December 2003).
- <sup>17</sup>Ibid., para. 102.3.a, 4.
- <sup>18</sup>NATO, AJP-4(A), 1-2.
- <sup>19</sup>Tyler Cowen, “Public Goods and Externalities” [article on-line]; available from <http://www.econlib.org/library/Enc/PublicGoodsandExternalities.html>; Internet; accessed 24 February 2005.
- <sup>20</sup>Han De Nijs, “Defence Requirements Review” (paper presented at LFPAC 5, Budapest, Hungary, 7-9 January 2004).
- <sup>21</sup>NATO, “NATO in Afghanistan Fact Sheet” [fact sheet on-line]; available from [http://www.nato.int/issues/afghanistan/040628-factsheet.htm#troop\\_contributions](http://www.nato.int/issues/afghanistan/040628-factsheet.htm#troop_contributions); Internet; accessed 11 November 2004.
- <sup>22</sup>International Security Assistance Force (ISAF), “Order of Battle” [document on-line]; available from [http://www.globalsecurity.org/military/ops/enduring-freedom\\_orbat-04.htm](http://www.globalsecurity.org/military/ops/enduring-freedom_orbat-04.htm); Internet; accessed 12 December 2004.

<sup>23</sup>Steven R. Bowman, “Bosnia: U.S. Military Operations.” CRS Issue Brief for Congress, Congressional Research Service, The Library of Congress, 8 January 2002, 9 [document on-line]; available from [http://www.globalsecurity.org/military/library/report/crs/IB93056\\_020108.pdf](http://www.globalsecurity.org/military/library/report/crs/IB93056_020108.pdf); Internet; accessed 25 November 2004.

<sup>24</sup>Oystein Paulsen, “Nordic Polish Support Group” [article on-line]; available from <http://www.nato.int/sfor/misc/nordpol/t991017i.htm>; Internet; accessed 16 September 2004.

<sup>25</sup>Hellenic National Defense General Staff, “Hellenic Contingent in Bosnia” [article on-line]; available from [http://www.geetha.mil.gr/index.asp?a\\_1411](http://www.geetha.mil.gr/index.asp?a_1411); Internet; accessed 18 November 2004.

<sup>26</sup>Patrick Huguet, “Implementing MN LOGS: French Considerations” (paper presented at the NATO Standing Group of Partner Logistics Experts (SGPLE) meeting, Sofia, Bulgaria, May 2003).



## CHAPTER 3

### RESEARCH METHODOLOGY

The sequence of work in this thesis follows the general steps of comprehensive research. First, in chapter 1, the problem is defined, and research questions are developed in logical sequence to lead towards answering the primary question. The thesis statement is formulated in order to mark the end state of the research. The primary question will be answered regardless if the analysis in chapter 4 proves or disproves the thesis statement. However, proving or disproving the thesis statement will significantly drive conclusions and recommendations in chapter 5.

Chapter 2 contains a literature review relevant to research questions providing a basis for data evaluation. The data provided will be analyzed, which will lead to answering research questions. Finally, conclusions and recommendations will be developed in chapter 5.

The following describes the methodology that the thesis will use to discover and evaluate the evidence. The first step towards answering the primary research question is the identification of comparative advantage logistics capabilities for small nations. Chapter 2 provides a list of generic logistics capabilities required to support full-spectrum NATO operations. For various reasons that are specific to each individual country, some of these capabilities are more acceptable than others are. Based on the analysis of theoretical examples, chapter 4 will develop a set of common characteristics that defines comparative advantage capabilities for small nations. These characteristics will be applied to filter the capability list in chapter 2 for comparative advantage capabilities. Chapter 4 of this thesis will use the following criteria in order to filter out conditions

most favorable for the effective logistics contribution of a small country in NATO operations:

1. Advantage. A country must see the advantage it gains by developing and contributing its capabilities. Regardless if the advantage is economical or political, it must be visible. Also, the capability must be sizable enough to be advantageous for NATO and other TCNs. This criterion is applied to capabilities themselves as well as to specific conditions.

2. Unity of Command. This is crucial in order to receive the required contribution from TCNs at the required time. NATO must be continuously involved in a leading role with small nations in capabilities planning, development, training, and provision for operations. This process must provide clear visibility for the nations on where their capabilities stand in the big picture and on when and where they are needed. In the multinational logistics arena there must be one single clearly identified authority to coordinate logistics capabilities (planning and generation) well before the operation. This authority must be within NATO.

After comparative advantage capabilities are identified and the most favorable conditions for small countries to contribute is developed, the model will be created on how those capabilities can most effectively be employed during NATO operations. Current experiences demonstrate that even when a certain capability is available in some nations, NATO never requests it and the nation never volunteers to commit it; and this misunderstanding creates a shortfall during the operation.

Then chapter 5 will contain a summary of recommendations on how more effectively to employ small nations' logistics contributions and identify possible areas for further research.

The thesis is constructed on answering several key questions. The primary research question queries how logistic contributions from relatively small NATO nations can become more effective during multinational operations. The purpose of the secondary questions is to provide a clear picture on which capabilities are most suitable for small nations to specialize in and how responsive is the NATO logistics system in employing small nations' contributions. Secondary questions are:

1. Which logistic capabilities, from those needed to support NATO operations, are comparative advantage capabilities for small nations?
2. What are the favorable conditions for small nations' to contribute their capabilities effectively to NATO operations?

## CHAPTER 4

### ANALYSIS

The starting point in effective integration of small nations' logistics capabilities during NATO operations is the identification of comparative advantage capabilities for those nations to specialize in it. Put in simple words, this thesis is looking for some logistics capabilities that small countries can successfully "export" to NATO "market," and ideally for the same value "import" other capabilities that they are not "producing," but still need during operations. This is only possible in a truly multinational logistics environment where all countries are willing to "trade" their capabilities. Furthermore, such "trade" is possible when contributed capabilities meet certain commonly recognized characteristics. If a multinational environment for "capability trade" exists among contributing nations, it means that a small country can specialize and provide capability, which significantly exceeds the national requirement. However, it will receive an equivalent of other required services from its partners. Therefore, a country must carefully calculate what it will need during operations and offer an equivalent of this capability. Unlike in free trade, the negative impact of such "import" will not exist: a small nation simply does not develop a broad spectrum of capabilities that would loose the competition against such "import." Contrary, it develops capabilities that are relatively cheaper and therefore attractive for others.

#### Comparative Advantage Capabilities

Resources are the most important factor in determining the type and scale of capabilities provided for operations. This is equally true for large as well as for small nations. When military budgets are tight, particularly in Europe, countries must find most

effective ways to produce most capabilities for least cost. Multinational cooperation makes possible coordination efforts among countries in order to create the most benefit for multinational operations. Multinational cooperation also facilitates the identification of comparative advantage capabilities among countries. In NATO, a number of countries has to bring together a number of different capabilities to support the operation. It is possible to identify which countries have a comparative advantage in which capabilities, comparing capability development and sustainment costs across the countries. To assist better visualization, for the rest of this chapter the US will exemplify a large country and Lithuania will exemplify a small country.

The comparison is started with an example that shows the limits of small countries. Two capabilities compared are: heavy lift helicopter transportation company (CH-47) and railhead detachment. For example, for the US, helicopter company (to produce and sustain this capability) costs 150 units and railhead detachment costs 15 units. A small country (for example, Lithuania) can produce these capabilities for 180 and 17 units, respectively. A large difference in the production cost of a helicopter company arises from the fact that if requested, Lithuania has to develop all the capabilities related to this function from scratch. This is a new capability for this small country; therefore, all necessary infrastructure, personnel and its training system, doctrine and procedures, equipment, maintenance and sustainment system that never existed before, must be procured and developed. In the US all these facilities and systems are already functioning, and the additional heavy lift helicopter transportation company requires less resources to produce. It will also require significantly less time to field it. The next issue in this example is the total cost of the capability relative to national

budgeting capabilities. For a large country, the 150 units that the production of the additional helicopter company requires, means a comparatively insignificant funding issue, which probably can be resolved by a slight redistribution of resources among other programs. It would not interrupt the funding of existing capabilities or cancel some future projects. For Lithuania, however, the 180 units represent a very significant part of the national defense budget. The decision to establish helicopter company would necessarily mean cancellation of funding for some future projects and not only in logistics.

Moreover, it would severely restrict the operation and maintenance budgets of other fielded capabilities. That would be an unacceptable opportunity cost for Lithuania.

The production of a railhead detachment is a cheaper option for both countries. Again, the US may be able to produce this capability slightly cheaper than Lithuania. This is because of the already existing experience in this field, better-developed links with industry and higher demand of this type of equipment across the military system. The difference between two countries will not be as significant as in the case with previous capability, and total cost of the package is affordable for both countries. Obviously US is capable of producing much more railhead detachments than Lithuania, but out of two capabilities discussed here, a railhead detachment is also the capability where Lithuania becomes a potential player. Although Lithuania has an absolute disadvantage in both capabilities, it has a comparative advantage in railhead detachment, and US has comparative advantage in helicopter company. In the broader NATO context that means planners can distribute the requirement for railhead detachments among a larger number of countries than the requirement for a heavy lift helicopter transportation company.

In this example, a railhead detachment is a cheaper capability and therefore affordable for all NATO countries to produce. This capability is of a comparative advantage for small countries compared to the other one. Therefore, small countries and NATO planners should particularly focus on producing this capability in small countries. In an operational environment, it then will be “traded” for a heavy-lift helicopter transportation capability provided by large and more financially capable countries. Specialization of small countries in commonly affordable capabilities brings cheaper but no less operationally important capabilities to the field with less effort from large countries. On the other hand, small countries will receive the required services provided by larger countries that would have cost savings to their budget. That is mutually beneficial for both sides.

The second example identifies capability cost-building blocks that are comparatively advantageous for small countries. Two main building blocks that create the entire production and sustainment cost of almost all capabilities are personnel and equipment. On the personnel side, the concern is total quantity of personnel required for the capability, its training requirements, specialties, and wages. On the equipment side, the concern sometimes might be available technology, research, and development costs, but most often it is the quantity of major equipment items required and their sustainment system and facilities. There are very few capabilities that require only personnel and no or very few equipment items. Therefore, such exceptional capabilities will not be considered for the purpose of this example. Two capabilities to be compared are: a personnel heavy movement control company (MOVCON) and an equipment heavy POL

supply company broken down by their personnel and equipment costs for two countries (see table 2).

Table 2. Capability Comparison		
Movement control company	Personnel cost	Equipment cost
US	30	20
Lithuania	30	30
POL supply company	Personnel cost	Equipment cost
US	20	40
Lithuania	20	60

To make it easier, personnel training expenses and wages are allowed to be equal in both countries and for both capabilities. It is obvious that the cost per person will be also the same. However, the movement control company (MOVCON) requires more personnel. Therefore, its personnel side is more expensive. The POL supply company requires fuel storage and distribution equipment, which is much more expensive than equipment required by MOVCON. When fielded, POL companies' equipment requires maintenance that is also more expensive than maintenance of MOVCON equipment. For a large country, that has more robust in-theater presence, this is less costly to perform. Therefore, the more equipment heavy the capability is, the larger is the difference between the investment required from a small and a large country to produce and sustain it. Summarizing all the above, the large country has an absolute advantage in both capabilities. However, a small nations' comparative advantage capability is a personnel heavy movement control company (see table 3).



Table 3. Comparative Advantage Example		
Capability	Large country	Small country
Personnel heavy (MOVCON)	50	60
Equipment heavy (POL)	60	80

Equipment very often drives the entire capability cost. Therefore, small countries should focus on capabilities that are less equipment heavy. There is one more reason that was not discussed in the example above. If the capability requires high technological equipment, it might be too expensive for a small country to follow technological improvements in this particular area. For example, a port and terminal operating company must constantly upgrade its software and hardware that provides asset tracking (RFID), because the majority of cargo and equipment items handled by this company comes from large countries where RFID technology is advancing constantly.

Small countries, focusing on personnel heavy logistics capabilities, in sum could provide more capability, because it is relatively cheaper. This would relieve some pressure on the large countries' personnel requirements during the operations. Again, this is a mutually beneficial solution.

This third example shows the level of contribution that a small country can reasonably provide. It has a lower-level command structure, and it develops logistics capabilities accordingly to support the level of units available. For example, domestically Lithuania is developing brigade-level logistics capabilities (direct support), because the brigade is the highest-level combat unit in Lithuanian military. General support logistics is oriented to provide a higher level of services but again, for the same units (brigade).

During NATO operations type and volume of logistics capabilities, those are required at

corps or theater level, are different from those available in small nations. For example, fuel transportation assets available in Lithuania are oriented to support brigade. This capability because of its technical limitations cannot be used at theater level during NATO operation even if it were available for that mission. However, current NATO logistics planning process requires logistics contributions from all NATO members to corps/theater level as will be shown later in this chapter. This is understandable, because in order to support a NATO mission, the theater logistics structure must function and assets that cannot be outsourced or acquired in a host-nation are coming from only troop contributing nations. Can small nations effectively respond to this requirement? The answer is found by comparing the medium truck company and the HQ of the ground transportation brigade. Both of them are to be used at theater level. However, the small countries do not have a force structure where the ground transportation brigade exists as a unit. This is linked to the very first example above. The difference is that the helicopter transportation company was above financial affordability limits for small countries, and HQ of ground transportation brigade is above the command level (even if it is relatively cheap) for this particular logistics function in a small country. Domestically this capability would not be sustained because it cannot be employed for any function. However, it is not to say that small countries cannot contribute to the building of this capability. The transportation staff officers are available in almost every country and based on the bilateral agreement with brigade HQ framework nation or as a result of deliberate planning process, those individual officers can augment brigade HQ during contingencies.

The medium truck company represents one of the capabilities that are commonly used in every country independently on its size and command structure. It is quite equipment heavy; however, off-the-shelf equipment (trucks already produced by industry) is successfully used to perform its mission. That ranks this capability as low cost one. The only requirement, that elevates the cost of this capability in contemporary operational environment comparing to domestic use, is increased protection measures for the drivers.

This example suggests that it is comparatively advantageous for a small country to focus on the available capabilities used domestically rather than developing a capability that does not fit to national needs. Small countries should not develop capabilities that are alien to their command structure, but still they can contribute to corps and theater level. This contribution can come from already available capabilities that are already used to support national force structure. Even if country decides to develop such a capability beyond what is domestically required, it can successfully “trade” it in a multinational environment for other services. A single multinational authority must coordinate this process to avoid unnecessary spending and capability surplus.

The fourth example deals with functions that are historically performed by certain countries. The example is Role 3 hospital provided to NATO by the Czech Republic. This is a relatively expensive asset for a small country. However, it was produced in the past and today it is available for operations. Personnel are experienced, equipment is functioning, and therefore it is beneficial for NATO and this country to keep providing this asset. On the other hand, other Czech logistics commitments should be reviewed in

order not to overload this country to the point that it can no longer sustain a contribution of this medical capability.

The fifth example introduces more capabilities than identified on the NATO list. These relatively cheap, personnel heavy capabilities require highly specialized personnel. Examples are capabilities, like chaplain services, contracting specialists and finance and resource management specialists. Specificity of these particular personnel is in its ability to perform respective duties in a multinational NATO environment according to existing NATO regulations.

These capabilities are related to a medium truck company in the third example in a sense that all countries use them. What takes some additional investment is the required NATO training for the personnel. However, by doing this a small country will get more advantages than large one because it will significantly increase NATO-trained personnel in its own military. Across the large military, this increase will not be so significant. This allows a small country a better understanding of how NATO works, and therefore is particularly important because NATO influence in small country is much more visible than in a large one.

#### Characteristics, Defining Comparative Advantage Capabilities

Different small countries, considering their different experience and domestic needs, economic capabilities, political goals, and ambitions can apply those characteristics as a set or each one independently. It is not required that capability meets all of these characteristics. However, common sense must be used in an application of these characteristics. For example, if a certain capability is affordable, mutually beneficial, and personnel heavy but has no peacetime application in a certain country, it

will probably not be a comparative advantage capability for this particular country. If it fits into the national command structure, is affordable, and mutually beneficial but is equipment heavy, such a capability most likely fits the definition of a comparative advantage capability for this country. Following the analysis of the theoretical examples above, this is the list of characteristics:

1. Capability should be economically affordable. Development of a certain capability should not create severe limitations on other capabilities required domestically or already successfully provided by the respective country for multinational operations.

2. Capability should be mutually beneficial to all participants. The array and volume of capabilities that countries bring to support NATO operations must contribute and integrate into one another to provide effective support to all national contingents. They also must be distributed among nations in the way that no country feels significantly overexploited. Each participant must gain something (reduced costs, reduced footprint, etc.) from the capabilities “trade.”

3. Capability should be personnel rather than equipment heavy. Personnel heavy logistics capabilities are relatively cheaper to produce and sustain. Therefore, small countries can provide more of such capabilities. Bringing more capabilities to the field, small countries contribute more to the operation even if this contribution is less costly.

4. Capability should have domestic applications in the countries of their origin, and they should fit the national command structure. This will guarantee an economic benefit and the sustainment of the capability over a long period. At the higher than national command level, the country still could provide a capability that it normally uses in own military if it can be integrated at this level.

5. Capability should be historically performed by a certain country. Countries should continue providing capabilities that they specialize in. This is an exceptional characteristic, because if a country historically provides a capability for NATO that NATO still needs, such a capability already proved being mutually beneficial.

### Evaluation of Capabilities

It will now be evaluated which capabilities from the list in chapter 2 meets above-developed comparative advantage characteristics for small countries. Three definitions will be used: unlimited--meaning each small NATO or partner nation can consider this capability as comparatively advantageous, because all comparative advantage characteristics can be met in all small countries; limited (L)--meaning certain characteristic may not be met in some countries; nonconsiderable (NC)--meaning certain characteristic that cannot be met in any of the small countries.

Table 4. Comparative Advantage Capabilities for Small Countries					
Function and Capability	Characteristics of comparative advantage capabilities				
	Economical affordability	Mutual beneficence	Personnel rather than equipment heavy	Domestic application	Historically performed
Movement and transportation					
HQ Ground Transportation Bde				NC	
HQ Ground Transportation Bn				L	
Medium Truck Coy			Unlimited		
POL Truck Coy			Unlimited		
Water Truck Coy			Unlimited		
Heavy Equipment Transport Coy				L	
Heavy Lift Trpt (CH-47)	NC		NC	NC	
Medium Helicopter Trpt (UH-60)	NC		NC	NC	
HQ Movement Control Bn				L	
Movement Control Coy			Unlimited		
Movement Control Team			Unlimited		
HQ Port Operating Bn				L	
Railhead Detachment			Unlimited		

HQ Railway Management Coy				L	
Port and Terminal Operating Coy			L	L	
Watercraft Coy				L	
Airlift Control Element				L	
Medical					
HQ Medical Grp				NC	
Role 3 Hospital (250 beds)				L	
Role 2 Medical Coy (Corps)				L	
Medical Evacuation Helicopters	Unlimited				
Medical Ground Ambulance Coy	Unlimited				
Casualty Staging Unit	Unlimited				
Medical Logistics Bn				L	
Supply and services					
HQ Supply Bn			L	L	
Ammo Supply Coy			L	L	
Field Services Coy			L	L	
POL Supply Coy			L	L	
Water purification detachment			L	L	
EOD platoon			L	L	
Infrastructure					
HQ Engineer Bde				L	
HQ GS Engineer Bn				L	
GS Engineer Coy			L	L	
Seaport Construction Eng Coy			L	L	
Railway Engineer Coy			L	L	
Bridging Coy			L	L	
Maintenance and repair					
HQ Repair/Maintenance Bn				L	
Repair Parts Coy			L	L	
Maintenance Coy			L	L	
Heavy Materials Coy			L	L	
Recovery Team	Unlimited				
Additional					
Chaplains	Unlimited				
Contracting team	Unlimited				
Forward accounting support team	Unlimited				

### Summary

From the analysis above, the following conclusions are:

1. Most limitations to identify a capability as comparatively advantageous for a small country create domestic application characteristic. This is understandable because small countries have smaller command structures, and some required units, particularly unit headquarters, cannot be applied in home country. This may be overcome by

providing to NATO a partial capability or augmentation to headquarters, when it is mutually beneficial.

2. The entire list contains only four capabilities that small countries cannot provide. This is primarily because of financial affordability. Relatively too much of national resources would be used to develop and sustain such capabilities. The opportunity cost would be unreasonably high.

3. Capabilities, ranked as limited due to one or another characteristic, can be provided at least partially, because even small countries are developing them at some extent. To facilitate provision of full generic capability as described by NATO logistics planners, small countries should decide to specialize in such capabilities. If needed, they will exceed the national requirement in this capability, but they will still successfully “trade” it for other capabilities in a multinational environment.

4. Characteristic number 5, depending on the country, it may apply to each of the capabilities, except those defined as nonconsiderable. This is an exceptional characteristic, where NATO planners should look carefully if the nation is historically specializing in some area. Such specialization may be mutually beneficial by default and therefore should be promoted.

The review and analysis of examples in chapters 2 and 4 identify logistics capabilities which currently enjoy multinational participation during some operations. Those are transportation services (cargo, POL, and water), Role 3 medical hospital, POL supply, and water purification. Thus, very few logistics functions so far enjoy multinational benefits. The potential, as seen from table 4 above, is large.



The potential comparative advantage capabilities for small countries have been identified in table 4. If a capability meets some or all of these characteristics for a certain country, it will be advantageous for this country to develop it compared to other capabilities and other countries. However, it does not necessary mean that it will be beneficial for the country to contribute this capability to operations. Certain conditions should exist in a NATO multinational logistics environment to make it beneficial. It will be further analyzed what those conditions should be.

#### Conditions, Favorable for Small Nations' Contributions

As defined in chapter 3, two evaluation criteria for filtering out these conditions are advantage and unity of command. It is required that nations see a relative advantage when contributing certain capabilities. It is also required that multinational logistics contributions be centrally coordinated within NATO in the early planning stages of a future military operation. Currently, most multinational cooperation is occurring at the division and below level. The NSG and BELUGA outlined in chapter 2 are good examples. In NSG, Norway was running common logistics operations (fuel, water and cargo transportation, camp administration, and movement control) for four other countries during IFOR. It was not even really multinational, because a single country was providing the logistics functions according to the agreement. The BELUGA--transportation unit created by four countries--performed transportation service for the entire SFOR. Four countries actually contributed their assets to this group. That saved the overall national resources and reduced the footprint in the theater. For the involved countries the advantage was obvious. Moreover, they had agreed upon a clear command structure for a multinational unit.

However, these units were ad hoc organizations created by a combined effort of the individual nations in response to an urgent national needs rather than a coordinated NATO effort. This reflects the current situation in NATO logistics: multinationality, endorsed and promoted by NATO logistics doctrine is still the ad hoc solution on the ground. It is largely so, because nations do not see the advantage of it and because NATO does not provide timely and effective planning, force generation, and command and control for multinational logistics units.

Therefore, in order to be effective, the conditions for multinational logistics must meet the above criteria. Then, it is likely that small nations will develop and contribute their logistics capabilities.

The set of conditions can be started to develop with the analysis of this first example of France serving as RSN for fuel supply and distribution in KFOR. For better understanding of the situation, figure 2 shows the command and control system established for fuel support in KFOR.

In this example, the units from the French national support element were designated to provide theaterwide support, specializing in fuel storage and distribution.<sup>1</sup>

These units were under OPCON of the French NSE commander; however, they were tasked by the JFC through the Multinational Joint Logistics Center (MJLC). France volunteered to be a role specialist in the POL supply in KFOR. It meant that France would provide all the necessary materiel and personnel and C2 assets to implement this mission. A couple of other countries volunteered to assist France in specific more limited areas. For example, Italy provided some fuel transportation assets, and Belgium assisted

with fuel hauling. However, the JFC logisticians were coordinating the entire function with France.

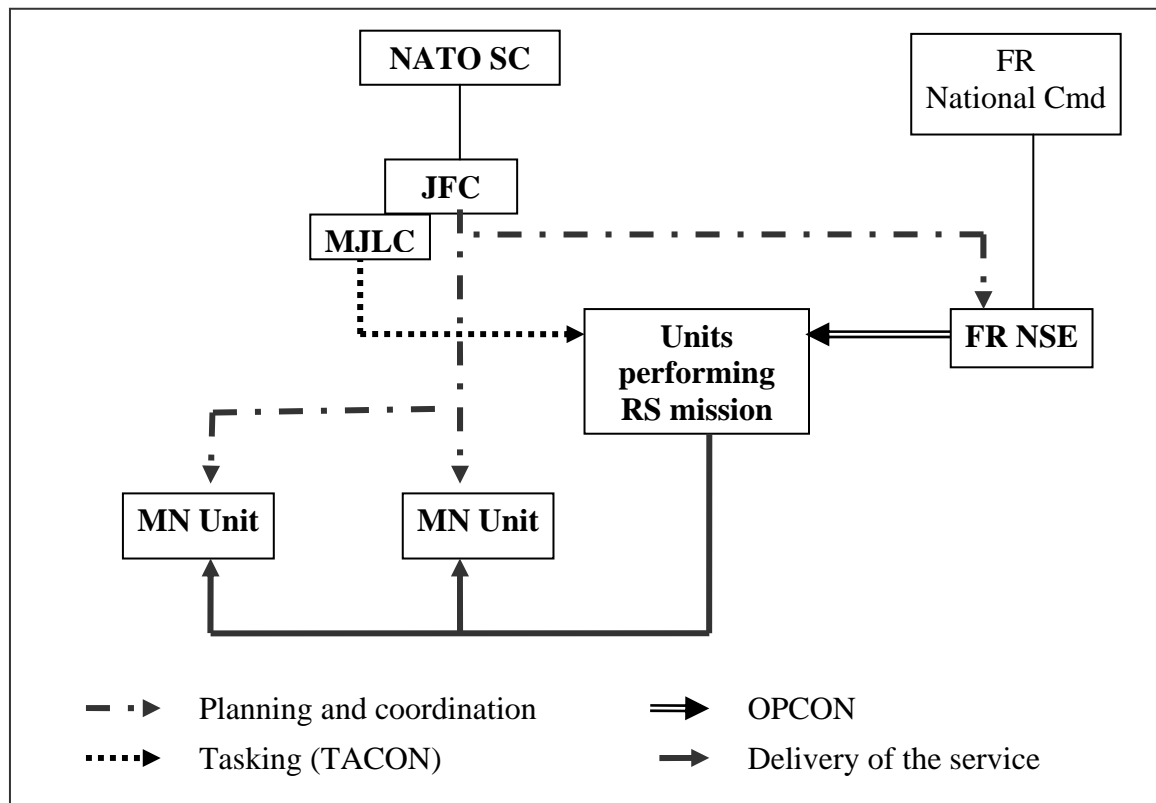


Figure 2. Command and Control System for Fuel Distribution During KFOR

The first favorable condition for a small country's contributions is that the volume of the service provided by one country must be manageable for that country. A small nation cannot alone undertake a mission like France did in KFOR. That would require too many assets and resources to perform it. However, it can contribute to it, or several small countries can cooperatively provide it. The role specialization concept, which was introduced in AJP-4.9, means for small countries' specialization at significantly lower level. That ties in with at least two comparative advantage characteristics, listed above.

Small countries and NATO should look for specialization in the services that are economically affordable and domestically usable.

Another condition that can be drawn from this example concerns funding. A year after France provided services, there still were some countries that did not pay for it. AJP-4(A) states, “Nations should absorb any and all costs associated with their participation in a NATO-led operation (“costs lie where they fall”).” Doctrine envisages bilateral or multilateral arrangements between TCNs concerning reimbursement for provided services. However, in this example NATO authority tasks a national unit to provide service for units of other nations, but when it comes to paying for this service, NATO is no longer involved. This creates confusion, because France had to negotiate with each individual country to be reimbursed, and national views how to calculate service costs are often different. The situation suggests that a single coordinating authority must be responsible for requirements generation, tasking, and reimbursement for provided services.

Moreover, no common rules are established that determine what to reimburse. There are several types of costs associated with a provided service. First, materiel that is provided for other nations--ammunition, fuel, repair parts, medical supplies, and others--is easy to quantify because it is simply the price of materiel that country is supplying in theater. Second, the capital cost of the equipment that is being used and its depreciation cost. This is very difficult to quantify. Nevertheless, small countries are particularly concerned with this because once produced the capability must be sustained. Worth mentioning is that if a country provides a capability that is often required during operations the equipment will wear out sooner. This will have a significant effect on the

small countries' national budget by having to procure new major equipment items when the ones in use approach the end of their service life.

In this particular example, countries were willing to pay France the actual cost of the fuel provided, that is, the price that France pays to the fuel supplier to the theater. However, it does not involve the later cost. Given that France operated a significant amount of equipment, that cost also becomes significant. For a small country, even if it provides a smaller capability, that cost will still be significant, and it often will discourage national authorities from contributing national assets even if they are available. It suggests that in order to be advantageous for a small country, the capability should involve possibly less of the above costs. That ties in with another comparative advantage capability characteristic--personnel heavy versus materiel heavy capability. However, this will not create favorable conditions for multinational logistics. It will only force small nations to focus on less costly capabilities.

Several conditions required for effective participation of small countries can be drawn from this example. First, NATO must determine and regulate the sharing of the service costs. In other words, a commonly acceptable cost-sharing formula must be created. It may be difficult to agree on, but the advantage of it is that country can enter a multinational agreement knowing what expenditures to expect. More significantly, reimbursement policies must be clearly regulated in this formula.

Second, a single multinational authority must coordinate and resolve cost-sharing issues. This should not be left to the contributing nation, because it is quite complicated and a sensitive task for a small country (as well as for other countries) to perform.

This second example shows the importance of information sharing and total visibility of national capabilities. The situation must be assessed when a country comes to force generation conference with a proposal to contribute logistics assets or to change its already committed assets. NATO has no system or tools in place that allows this issue to be known beforehand. No “database” of national logistics assets exists in NATO. Most likely this national decision is not coordinated with other nations, because an individual nation is not required to do so. That creates the situation unfavorable for logistics planning, particularly when the time is very limited. In these conditions, it is very hard, if not impossible, to create an effective multinational logistics support system for the operation. Automatically, most countries (particularly larger contributors) prefer to establish national support stovepipes at the beginning of an operation, which later on becomes inert and difficult to change.

However, NATO has some tools for collecting information on available national logistics assets. First of them is the Defense Planning Questionnaire (DPQ). National answers, provided to this biannual document, provide some, though very limited, visibility for NATO logistics planners. This tool is more useful for long-term logistic capabilities planning. Next is the NATO Logistics Reporting Tool (LOGREP) which is an automated system, required for all NATO members to implement and use. It is used to report national logistics status to a NATO commander. However, it can be used also for reporting national logistics assets. Advantages of this would be a standardized format of data and up-to-date information, provided by nations that can be used during force generation. It is fair to recognize that large contributors might have some problems reporting their assets through LOGREP and keeping the information updated. This is due

to the large amount of data to report and the constantly changing situation due to deployments. However, small nations should not experience these problems. The advantage for a small nation is when NATO has accurate information on national capabilities it can effectively coordinate their employment with the nation as well as with other nations. This will not diminish the role of an individual nation in the planning process, instead it will make planning faster and more flexible.

Sharing of up-to-date information on national logistics capabilities with NATO is another condition that facilitates the participation of a small nation in multinational logistics. Only when NATO logistics planners have the actual information on hand can they effectively build the theater support structure and incorporate contributing small nations with the best advantage. This condition also provides the possibility for a small country to visualize what logistics support will be available in theater. This should facilitate decision making in a small country when deciding what the total national contribution should be, because the more multinational support is available, the more likely is a small nation's participation.

The third example shows the need for multinational training. That involves unit training as well as training of national staff personnel in NATO procedures. An example is Lithuania contributing a water purification detachment. At the national level the water purification capability was developed having in mind niche capabilities and specialization in logistics. By itself, it is a progressive step. However, the small national capability during an operation will become part of a larger unit; therefore, it must be able to integrate and function as part of this unit. That is the case for the Lithuanian water purification unit. It is preparing for operations within the 101st Dutch Engineer battalion.

According to the national plan, the unit was prepared and organized by mid-2004. From 21 September to 7 October 2004 the multinational exercise Heroic Engineer took place in Germany to test the readiness of a Dutch battalion. The Lithuanian contingent was part of this battalion during the exercise. Lessons learned from the exercise identified certain areas to be improved: additional specific equipment requirements, lack of liaison officer, and personnel English language skills.<sup>2</sup> Besides that, technical arrangements were made and tested between both sides, unit deployment readiness was exercised, and communication of the unit with national authorities was established. Only after this practical exercise, was it possible to adjust all the deficiencies and minimize misunderstandings in command and control, deployment, tasking, communication, and sustainment of the national contingent in the multinational unit.

Such practical training provides confidence in the unit as well as among national authorities in a small country. It also provides personnel training at national headquarters, because multinational arrangements had to be concluded according to NATO procedures. During this, finance, legal, and other involved personnel are being trained in NATO procedures and their application.

These adjustments that were made possible by multinational training remove all remaining questions and obstacles between two involved countries and within a small country as well. NATO planners also receive more flexibility and are able to build a theater logistics system faster. There are no remaining issues, except a political decision that would restraint effective participation of such a unit in a multinational operation. It is not to say that this stage could not be achieved without a practical exercise, which is an expensive effort. However, a small country, lacking experience and confidence, gains



both of them during such training, and NATO logistics planners can better visualize the real capabilities.

The fifth example describes the importance of logistics planning responsiveness for successful multinational integration. Logistics planning for a certain operation must start early enough so there is a clear logistics support concept by the beginning of the operation, required capabilities are identified, and countries are able to contribute. ISAF exemplifies it. NATO took command and coordination of ISAF in August 2003. By October there were no multinational logistics units under ISAF Headquarters. In addition, the J4 was primarily involved with day-to-day logistics operations, and MJLC was involved with long-term planning and evolution to multinational logistics.<sup>3</sup> Even current doctrine identifies the opposite tasks for these two entities. Moreover, this was happening already well into the operation. Such situation requires participating nations and multinational units deployed to area of operations to establish national logistics stovepipes to support national contingents.

That indicates the absence of initial logistics planning, before the operation. This situation creates ad hoc logistics requirements later on in the operation when countries chaotically are contributing and also withdrawing their capabilities. Not responsive or late multinational logistics planning is pushing nations toward national support. That requires more assets from most nations, including small ones. Being unable to provide a variety of logistics assets, small nations tend to limit their combat contribution to a particular operation, so there is less to support. In addition, they are looking for arrangements with larger countries--have them to support a small national contingent.

The result of inaccurate logistics planning is an underdeveloped multinational support system and an extensive national logistics presence in theater. It is very likely, that under these circumstances proposed national logistics contributions cannot be effectively employed in theater. Consequently, the absence of a theater logistics support plan from the very beginning of an operation restricts small nations (as well as others) to contribute their capabilities to this purpose.

This last example identifies the importance of prearrangements. A lot can be done long before any operation. In the club of 26 independent countries, ad hoc solutions should be avoided as much as possible. A specific of small countries is that most likely their capability will be part of a larger logistics unit. Bilateral negotiations and cooperation will be required in order to create a functional unit. The previous example of the Lithuanian water purification unit identifies this. All required agreements were concluded prior and during the exercise in Germany. During the exercise, interoperability, command and control, and support shortfalls were identified and will be addressed after the exercise. Finally, this capability is reported to NATO, so NATO planners have visibility of it.

All prearrangements are done without some particular operation in mind. That reduces the requirement for bilateral negotiations', thus planning time before the operation. Still, limited uncertainty exists there. Some adjustments may still be needed to available agreements or equipment due to geographical conditions of certain area of operations.

NATO logistics planners benefit from peacetime prearrangements, because they have to deal with a lower number of national units. However, to achieve it, NATO has to be active in finding and initiating contacts between the nations.

A small nation benefits from that, because it is able to focus on certain capabilities in the long term and develop relations with the partner nations in this capability.

### Conditions for Effective Involvement of Small Nations in NATO Operations

The above analysis of examples allows the listing of some common conditions that will make multinational logistics more attractive for small countries and easier to implement. These conditions should be applied as a single set, because this is how small countries view multinational cooperation. If any of this is lacking, there is more likelihood that a small country will be reluctant to join multinational logistics.

1. Volume of the function provided must be manageable for the country. Nations are not likely to develop and contribute capabilities that are well beyond their national needs.

2. Fair cost sharing for services provided. Functioning reimbursement system must be in place, so a country can calculate what part of its expenses will be reimbursed. It should depend less upon other participating countries and be more of a standard mechanism in NATO.

3. Information sharing and total visibility of capabilities. Countries must share information on available logistics capabilities with NATO. NATO must have a total visibility of national capabilities in order to be able to initiate effective multinational cooperation.

4. Robust and responsive theater logistics system planning. NATO must lead this process by developing logistics plans early and by constantly adjusting them. A single, active, and strong NATO authority in this process is required. This helps minimize ad hoc requirements and shortfalls during the operation and also allows small nations early on to see possibilities for their commitment.

5. Reduced requirement for bilateral negotiations prior and during the operation. Negotiating cooperation between countries normally takes a long time and requires much effort from both sides. It depends less on the capability or unit size but more on administrative arrangements. The fewer negotiations required in the predeployment period and during the operation, the more likely a small country will commit its capability.

6. Peacetime prearrangements for cooperation agreements. This helps not only reduce negotiations between countries prior to the operation but also clarifies a lot of details and brings confidence to a small country. It is also the way of creating multinational units during peacetime. It might not necessarily mean that this unit will be used in the exact same composition for a operation, but countries and personnel involved in such prearrangements will be better trained to conclude arrangements in a operational situation.

7. Multinational training. It is the best way to bring confidence and experience to a small nation. By testing national capabilities in a multinational environment during peacetime, the nation and NATO will experience benefits of multinational solutions. Later this will provide a basis for a contribution to operations.

This set of conditions will lead to an achievement of the criteria defined in chapter 3: it will allow the small countries to see the advantage when contributing national capabilities and will make NATO logistics more coordinated and flexible. This will make multinational solutions easier. However, a single NATO logistics authority is required to create most of these conditions. It depends on how much authority the countries will be willing to delegate to NATO and how effective NATO will be in executing this authority.

#### Proposed Contribution Model

“NATO needs to concentrate on how to accomplish integrated logistics. We are wasting scarce resources by each nation having its own independent supply system. Understandably, there are certain things that you have to keep independent, but in places like far off Kabul, it becomes very self-evident NATO needs to become more logistically integrated,” says former ISAF Deputy Commander.<sup>4</sup>

Based on the above analysis, a proposed model on how NATO can really become more logistically integrated will be described. First, countries should develop and contribute capabilities, selected using comparative advantage capability characteristics. Second, they should delegate, and NATO must exercise enough authority to obtain a unity of command in order to be able to effectively plan, generate, and command multinational assets.

First, identification of what command level national contributions are likely to be required according to current NATO logistic planning model will be made. Figure 3 provides a typical example of the small nations’ potentially required contribution.<sup>5</sup> For example, Lithuania is contributing a battalion task force to NATO pool of forces. By default, it has to bring all the organic battalion’s combat service support to make the unit

self-sustained. This small national contribution will most likely become part of a larger unit; therefore, in addition, brigade and division framework nations can ask Lithuania to contribute logistics assets to higher-level units. This will be clarified during the force generation conferences bilaterally between TCNs.

Up to this level, there is minimum NATO involvement in planning and generation of capabilities, as these are considered organic capabilities of the national units. Though, NATO logistics doctrine promotes multinational solutions at this level also. That is the level where multinational solutions are most often implemented today. However, these assets are not NATO-commanded theater assets. Instead, they are in most cases designed to support nations from which they come from, and theaterwide NATO gains limited advantage of them.

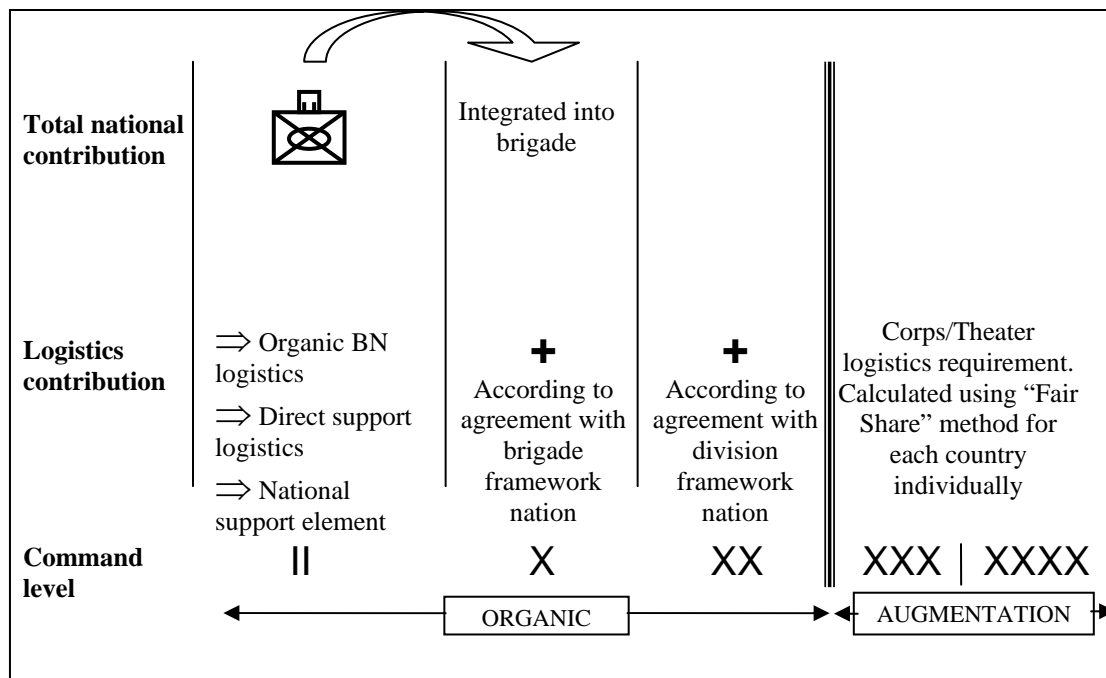


Figure 3. Current NATO Logistic Planning Methodology

Source: Han De Nijs, ACT Operations Analysis Support Branch. Defence Requirements Review. Presentation made during LFPAC 5, Budapest, Hungary, 7-9 January 2004.

It is above division where NATO determines the requirement and plans for it. To determine what each nation's logistic contribution to the pool of logistics forces must be, NATO uses the Fair Share method. The purpose of it is to distribute most evenly a theater logistics requirement among all participating nations. Fair Share identifies what sized national logistics contribution each country must have ready for contribution to NATO operations. It is a planning figure and does not tell what capabilities and functions national logistic units must perform, or when and to what particular operation it must commit. In the Defense Planning Questionnaire, Lithuania identifies an infantry battalion battle group as its contribution to the NATO pool of forces. According to the Fair Share Method, Lithuania's fair share in logistics capabilities will then be approximately 2.5 generic logistics companies (from the list provided earlier in this chapter). This is what the country will not necessarily deploy at once, but it must have it available for deployment. This figure will grow together with the increasing national combat contribution. Knowing this the selection of specific capabilities can begin.

The logic of this thesis suggests, that small countries at this point should apply characteristics of comparative advantage capabilities in order to find out whether a certain capability can be considered as a potential contribution. This process should not occur in a vacuum. NATO logistics planners must be actively involved in coordinating and assisting a small nation in making the right (mutually beneficial) decision. Enough tools exist to realize this, and the two most important are the DPQ process and the Logistics Force Planning Advisory Committee (LFPAC). LFPAC should be used as coordination board for two reasons: first, to determine fair share portion of logistics capabilities for each individual country, and second, to identify comparative advantage

capabilities for each country. It will be more effective when these capabilities are commonly identified in a NATO context. National representatives and NATO authorities during LFPAC should obtain enough authority to compel an agreement. NATO should lead the process by presenting overall requirements and requesting contributions.

Only after comparative advantage capabilities are identified, they should be fixed in the Force Goal package for that individual country. Then it becomes a development plan for the country. During the DPQ, the country reports on the development status, which provides NATO visibility of current situation. This is the current procedure used in NATO, except that in the beginning there is no comparative advantage capabilities discussion. NATO simply requires certain capabilities from the country in the draft Force Goal package and subsequent negotiations are on whether the country will accept this requirement or not.

The main difference at this planning stage is that instead of directing nations to produce certain capabilities, NATO should lead the process of identification of comparative advantage capabilities across the countries.

After the Force Goal package is issued for implementation, the country should constantly keep NATO updated on its status. Therefore, NATO should operate a logistics capabilities database: single format for all countries to report. This will provide visibility of logistics assets across the countries and assist in faster force generation. For reporting purpose, small countries could use the currently available Logistics Reporting tool (LOGREP). For large contributors this may not always be acceptable, because LOGREP requires very detailed information. The variety and volume of capabilities provided by a large contributor may not be possible to reflect in such detail. However, small countries,



providing significantly less capabilities, will be able to share information with NATO effectively using LOGREP.

The database of national logistics capabilities must be maintained or at least accessible by the entity that will be responsible for the generation of logistics capabilities for the operation. AJP-4.6(A) states:

MJLC normally has Coordinating Authority (CA) delegated to him by the Commander through the CJ4. This provides him with the authority to effect consultation between nations, components, and other agencies, but does not give him the authority to compel agreement. In the case of disagreements, the issue would need to be referred back to the CJ4 for resolution. The provision of force level logistic units assigned by nations to an operation for the benefit of the overall force will normally be under OPCON of the Joint Force commander. The MJLC will conduct the routine tasking of these units on behalf of the Joint Force Commander.<sup>6</sup>

Therefore, in order to responsively plan and execute theater logistics, the MJLC must have the visibility of the national logistics capabilities. It should participate in the NATO Operational Planning Process and develop theater logistics requirements.

Visibility of national logistics capabilities will allow the MJLC to come up with the proposals for nations during logistics planning conferences on what is required from the individual nation for this particular operation and how the national capability can be integrated into the theater logistics structure. That will significantly increase NATO's role in theater logistics planning, it will make force generation more responsive and easier for small countries to contribute.

Cooperation and integration are particularly important for small countries. The very limited capabilities that small countries are able to contribute call for their integration into larger units. Therefore, logistics participation of small countries in NATO operations will unavoidably boost multinationality.

The difference in this logistics capabilities generation phase is that during logistics planning conferences NATO should not only present a theater logistics plan to the TCNs (as it is now)<sup>7</sup> but also require certain capabilities from individual small nations and identify the ways to integrate these capabilities. One of the preferred ways should be cross integration of capabilities between small nations--building MILUs. That way NATO will receive complete units from its small members, and closer relations will develop between countries.

MJLC and LFPAC should initiate and lead multinational training among small nations in order to facilitate operational planning and capabilities integration during peacetime. This will lead to reduction of bilateral negotiations prior to the operation and clarify issues, such as command and control, deployment options, tasking, communications, and sustainment of national contingent within multinational unit. It will also provide a basis for peacetime prearrangements between participating countries on MILU establishment or the implementation of other modes of multinational logistics support. Also, MJLC personnel will become more experienced in their doctrinal role of coordinating multinational logistics.

Finally, when dealing with small countries, NATO should concentrate on obtaining their logistics contribution to the multinational pool of forces. Less stress should be put on contributions to brigade and division levels (see figure 3). The following two reasons suggest that. First, the more effective and capable theater logistics is, the more support multinational brigades and divisions will receive from it. It reduces the requirement for organic logistics assets at this level to some extent. Second, small countries often do not have enough logistics capabilities to contribute to different levels

at the same time. They will remain responsible for organic support, but all the additional logistics assets should be pooled so NATO and nations can decide where it will be most advantageous to integrate them.

### Summary

In this chapter, characteristics of comparative advantage capabilities that set the way for small countries to evaluate logistics capabilities and decide whether they are relatively advantageous for them were identified.

Comparative advantage theory allows identifying countries' niche capabilities. It is most advantageous for an individual country to develop and provide these capabilities for multinational operations. It is also advantageous for NATO because of the increasing number of potential contributors and more possibilities to realize multinational solutions in logistics.

A set of favorable conditions for small countries to commit to NATO operations was developed. These conditions, if existing, will make NATO multinational logistics more attractive for small countries and also more flexible and effective. Though, they may not always be acceptable for large contributors. That is one more issue that requires special attention to the small nation's case.

Currently, NATO logistics doctrine leaves too much responsibility for the nations. In order to make multinational logistics a reality, NATO must significantly increase its unity of command. NATO must play a more proactive and leading role during capabilities planning phase, as well as during force generation and operations support phases in order to create these conditions. This is only possible when responsibility and authority is concentrated under single command.

Based on the criteria of advantage and unity of command, a model of how small countries' logistics can more effectively support NATO operations was built. The key points are that during capabilities planning: (1) NATO and a small nation should aim to identify comparative advantage capabilities; (2) a single national logistics capabilities database must exist in order to provide visibility of capabilities; (3) LFPAC and MJLC should execute multinational training and the establishment of prearrangements during peacetime; and (4) MJLC should be single authority in force generation and operations support phases. It should plan theater support structure and request concrete capabilities from the countries. It should also plan for capability rotations. That will create more systematic approach to multinational logistics where nations are not chaotically contributing their capabilities in ongoing operation and then withdrawing them on very short notice and as a result creating a shortfall and distrust in multinational logistics.

Based on this analysis, the next chapter will contain summarized proposed changes to NATO logistics doctrine and procedures.

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<sup>1</sup>Patrick Huguet, "Implementing MN LOGS: French Considerations" (paper presented at the NATO Standing Group of Partner Logistics Experts (SGPLE) meeting, Sofia, Bulgaria, May 2003).

<sup>2</sup>Julius Vilcinskas, "AAR Form Exercise Heroic Engineer" (paper presented to Armed Force Command, Lithuania, November 2004).

<sup>3</sup>NATO, "Logistics Aspects of Current NATO Operations" (paper presented at the Senior NATO Logisticians' Conference (SNLC), Brussels, Belgium, 16 October 2003).

<sup>4</sup>Crystal M. Raner, "NATO Needs to Transform its Logistics Support says Former ISAF Deputy Commander during ACT Visit" [article on-line] (7 September 2004, accessed 3 December 2004); available from <http://www.act.nato.int/multimedia/articles/2004/090704mngenleslie.htm>; Internet.

<sup>5</sup>Han De Nijs, "'Fair Share' Allocation of CSS Requirements to NATO Nations" (paper presented at LFPAC 5, Budapest, Hungary, 7-9 January 2004).

<sup>6</sup>NATO, AJP-4.6(A).

<sup>7</sup>NATO, AJP-4(A), para. 0215.b, 1-9.

## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

The small nations' logistics contributions to NATO operations can become significant if they contribute comparative advantage capabilities and if NATO obtains unity of command with high authority to coordinate capabilities from the early planning stages to their implementation during the operation.

Without NATO exercising more forceful leadership in organizing multinational logistics, it cannot be effectively realized, because either small countries will keep enjoying it as free riders or they will keep providing capabilities that are not necessarily required. The ad-hoc nature of multinational solutions will flourish creating uncertainty. This is because of the lack of coordination of national interests and priorities. Duplication or shortfalls are unavoidable without centralized administration of logistics planning and capability generation processes. All this will lead to nations doubting the abilities of multinational logistics and subsequently their unwillingness to produce capabilities and contribute them to this purpose. The circle closes, even NATO logistics doctrinal regulations, that already today are providing a good enough basis for multinationality, cannot be implemented effectively.

#### Conclusions

A community of small NATO members from a logistics standpoint requires special attention and a different approach than large nations. This is because small countries cannot effectively support themselves during an operation (opportunity cost of this is unreasonably high), so they will more often look for multinational solutions. Therefore, they are more likely to support multinational operations. However, without

authoritative intervention from outside, they will always seek the cheapest solution for the nation, and the contribution of their own logistics capabilities may not be their choice. NATO logistics doctrine provides enough tools to successfully exercise multinational logistics. However, the principle of public good suggests that it is irrational for small countries to contribute, because they can receive enough logistics support from large countries. Most likely they will continue to be free riders--receive logistics support from large countries on the basis of bilateral agreements.

When considering the potential of small countries, their quantity in NATO speaks for itself. However, this potential can only be transferred to effective capabilities if directed and guided to a single purpose. Independently, every small country will look for an individual benefit but not for a collective one. To make multinational logistics effective and reliable, there must be an external forceful intervention in capabilities planning and generation processes. This intervention can only be done by NATO. Multinational logistics will remain public good; however, more countries will be directed to contribute.

#### General Recommendations

Multinational logistics must remain a public good and available to all participants. No restrictions should be made based on whether the country contributes logistics assets or not. This will facilitate coalition building. However, the number of logistics functions performed multinationally must increase. NATO authoritative and forceful intervention is essential in order to realize this. The potential, as seen from chapter 4, "Evaluation of Capabilities," is very large. That must be achieved by integrating the broader spectrum of logistics capabilities, and small countries, providing their niche capabilities, can play a

significant role. The more logistics functions are performed multinationally, the more public good multinational logistics provides, the more reliable and beneficial it is, and the more positive national response it will have.

Capabilities, that small nations are about to contribute, must be comparatively advantageous for these countries. They must be carefully selected using comparative advantage theory and agreed upon by national and NATO experts. Their selection must be led by NATO. In order to do that, NATO must have a clear and up-to-date picture of all national current and planned logistics contributions. This will be required in order to foresee capability integration already in its planning stage.

A country must know the reason for a request for a particular capability and how it will be integrated into the NATO logistics support system during the operation. It should not be a purely national responsibility to make the necessary multinational arrangements. The NATO authoritative coordination of the logistics planning and generation processes will reduce the number of noncontributors, create more logistics capability, disperse this capability among more countries, and bring essential capabilities together when required for operation.

NATO must initiate and lead the logistics capability package building during peacetime. The more prearrangements are done before the operation, the easier it will be to get required capabilities from nations and integrate them into a single system early in the operation. This must be the goal: to have a multinational logistics system working from the start of the operation.

The most effective way to integrate small national contributions is the creation of MILUs. An individual small nation cannot undertake a full-logistics function, but several



countries brought together can provide it. This must be exercised during peacetime, and NATO should use its increased authority to implement it.

### Recommendations to Adjust NATO Logistics Doctrine

1. NATO must lead the logistics capabilities planning phase (part of the Defense Requirement Review process). During this phase comparative advantage capabilities must be identified. A NATO-wide forum should do this job in order to maintain all the countries and the NATO headquarters at the same level of information and understanding. The result of this forum must define national shares of logistics contributions, ready to be fixed in Force Goals. The Logistics Force Planning Advisory Committee (LFPAC) currently performs some of these functions, but only at the consultation level without decision-making authority. Its authority has to be strictly defined and institutionalized in Chapter 2 of AJP-4(A). That will enhance NATO authority in logistics planning.

2. The Multinational Joint Logistics Center (MJLC) must play a central role in logistics capabilities generation phase. In order to do that, its authority must also be enhanced. Paragraph 103.1.c. of AJP-4.6(A) must reflect that. Based on national contributions agreed in the Force Goals and visibility of available national logistics assets, MJLC must be able to request certain capabilities from certain countries for the required operation. That will enhance NATO authority in generation of logistics capabilities.

3. The requirement for sharing updated information on national logistics capabilities must be reflected in Chapter 2 of AJP-4(A). Information sharing provides total visibility of capabilities which is the basis for logistics planning. NATO must have a

total visibility of national capabilities in order to be able to initiate effective multinational cooperation.

4. The current policy that “costs lie where they fall” particularly during Non-article 5 operations is not acceptable for small nations. Section VIII of Chapter 3 of AJP-4(A) must introduce the reimbursement concept and clarify the coordinating authority for controlling reimbursements between the nations. Reimbursement should be less dependent on direct negotiations between participating countries and be more of a standard mechanism controlled by NATO authority.

#### Possibilities for Further Research

This thesis confirms that current NATO logistics doctrine provides enough tools to enjoy multinational logistics solutions. However, the lack of a NATO authority to use these tools leads to unexplored multinational capabilities. NATO should research how it can increase its forceful leadership in multinational arrangements.

Small nations can research and coordinate with NATO their comparative advantage capabilities without delay. This is demanding work; therefore, it should be done with the view of at least ten to fifteen years in advance.

The effectiveness of NATO logistics support lies in multinationality. Multinationality can be promoted only by enhancing cooperation and coordination between allies. This, in turn, can be accomplished by a forceful NATO leadership in logistics planning and execution.

# APPENDIX A

## FORCE CONTRIBUTION TABLE

Table 5. Bosnia-Herzegovina IFOR and SFOR Deployments		
Country	IFOR March, 1996	SFOR January, 2001
Belgium	1 transport company (300)	1 transport company (50)
Bulgaria	--	1 infantry platoon (50)
Canada	1 armored reconnaissance squadron 1 engineer battalion (1,000)	1 mechanized infantry battalion (900)
Czech Republic	1 mechanized infantry battalion 1 engineer company	1 mechanized infantry battalion (400)
Denmark	1 mechanized infantry battalion (800)	1 mechanized infantry battalion (300)
Estonia	--	1 infantry platoon (50)
France	4 mechanized infantry battalions 1 mechanized artillery battalion 1 engineer battalion 1 helicopter squadron 1 reconnaissance squadron (10,000)	1 mechanized infantry brigade (2,400)
Germany	No troops deployed in Bosnia; IFOR support units located in Croatia (4,000)	1 mechanized infantry brigade (2,050)
Greece	1 transport battalion (1,000)	1 transport company (100)
Hungary	1 engineer battalion	1 engineer battalion (200)
Italy	1 mechanized infantry battalion 1 armored company 1 mechanized artillery battery (2,100)	1 mechanized infantry brigade (1,550)
Latvia	--	1 infantry platoon (50)
Lithuania	--	1 infantry platoon (50)
Luxembourg	1 transport company	--
Netherlands	1 mechanized infantry battalion (2,000)	1 mechanized infantry battalion (1,000)

Norway	1 logistics battalion	1 logistics battalion (50)
Poland	1 airborne infantry battalion	1 airborne infantry battalion (200)
Portugal	1 airborne battalion (900)	1 infantry battalion (323)
Romania	1 engineer battalion	1 engineer battalion (100)
Slovakia	--	1 infantry platoon (50)
Slovenia	--	1 infantry platoon (50)
Spain	2 mechanized infantry battalions	1 mechanized infantry brigade (1,100)
Turkey	1 mechanized infantry battalion 1 armored company (1,200)	1 mechanized infantry brigade (1,050)
United Kingdom	2 mechanized infantry battalions 1 mechanized armored battalion 1 armored reconnaissance company 1 artillery battalion 1 helicopter battalion 1 signal regiment (13,000)	1 armoured battle group (1,100)
United States	2 mechanized infantry battalions 2 armored battalions 2 reconnaissance battalions 1 airborne battalion 2 mechanized artillery battalions 1 engineer brigade 1 air defense battalion 2 psy- ops companies (16,500)	1 infantry brigade-reinforced (3,600)

*Source:* Steven R. Bowman, *Bosnia: US Military Operations*. (CRS Issue Brief for Congress, Congressional Research Service, The Library of Congress, 8 January 2002, accessed 25 November 2004) [document on-line]; available from [http://www.globalsecurity.org/military/library/report/crs/IB93056\\_020108.pdf](http://www.globalsecurity.org/military/library/report/crs/IB93056_020108.pdf); Internet.

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